

What is claimed is:

1. A diagnostic apparatus for a fuel system supplying fuel to an internal combustion engine, the fuel system including a fuel tank having a headspace and a filler occluded by a removable cap, a charcoal canister in fluid communication with the headspace, and an integrated pressure management apparatus having a pressure operable device and a switch signaling displacement of the pressure operable device in response to negative pressure at a first pressure level in the charcoal canister, the diagnostic apparatus comprising:

a pressure source;

a first fitting adapted to be occluded by the removable cap, the first fitting being in fluid communication with the pressure source;

a second fitting adapted to sealingly engage the filler, the second fitting being in fluid communication with the pressure source and with the first fitting;

an orifice being in fluid communication with the pressure source, with the first fitting, and with the second fitting; and

a first valve controlling the fluid communication with the orifice.

2. The diagnostic apparatus according to claim 1, further comprising:
a pressure gauge in fluid communication with the pressure source.

3. The diagnostic apparatus according to claim 3, wherein the pressure gauge measures a range of pressures that exceeds an operational range of the integrated pressure management apparatus.

4. The diagnostic apparatus according to claim 3, wherein the pressure gauge measures a range of pressures between one inch of water above ambient pressure and two inches of water below ambient pressure.

5. The diagnostic apparatus according to claim 1, further comprising:
a second valve controlling the fluid communication with the second fitting.

6. The diagnostic apparatus according to claim 1, wherein the first fitting comprises a first one of a male member and a female member, the second fitting comprises a second

one of the male and female members, and the male and female members are sized for mating engagement with respect to one another.

7. The diagnostic apparatus according to claim 1, wherein the pressure source comprises one of a manually operated pump and a electromechanical pump.

8. A method of diagnosing a fuel system supplying fuel to an internal combustion engine, the fuel system including a fuel tank having a headspace and a filler occluded by a removable cap, a charcoal canister in fluid communication with the headspace, and an integrated pressure management apparatus having a pressure operable device and a switch providing a signal indicating displacement of the pressure operable device in response to negative pressure at a predetermined pressure level in the charcoal canister, the method comprising:

installing a diagnostic apparatus between the filler and the cap, the diagnostic apparatus including a pressure source;

operating the pressure source to draw a vacuum relative to ambient pressure; and

detecting the signal provided by the switch.

9. The method according to claim 8, further comprising:

measuring the vacuum relative to ambient pressure.

10. The method according to claim 9, wherein the measuring the vacuum includes determining a measured pressure level at which the detecting the signal occurs.

11. The method according to claim 10, further comprising:

comparing the measured pressure level and the predetermined pressure level.

12. The method according to claim 9, wherein the measuring the vacuum includes detecting leaks in the fuel system.

13. The method according to claim 9, further comprising:

preventing fluid communication between the pressure source and the filler;

wherein the measuring the vacuum detects leaks in the cap.

14. The method according to claim 9, further comprising:
bleeding off the vacuum relative to ambient pressure;
wherein the detecting comprises determining a change in the signal provided by the switch.

15. The method according to claim 8, wherein the operating the pressure source comprises at least one of operating a manual pump and operating an electromechanical pump.

16. The method according to claim 8, further comprising:
operating the pressure source to draw a negative pressure in excess of the vacuum relative to ambient pressure; and
verifying negative pressure relief by the integrated pressure management apparatus.

17. The method according to claim 8, further comprising:
operating the pressure source to create a positive pressure relative to ambient pressure; and
verifying positive pressure relief by the integrated pressure management apparatus.

18. The method according to claim 8, wherein the detecting the signal comprises at least one of connecting an electric meter to the switch and receiving an output signal from a computer connected to the internal combustion engine.